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Title:
MOTOR VEHICLE CONTROL PEDAL ARRANGEMENTS

Abstract:

1278919 Motor vehicle control pedals GENERAL MOTORS CORP 19 April 1971 [11 March 1970] 22611/71 Heading B7H The control pedals of a vehicle are mounted on a plate 18, 19 which is displaceable relative to the vehicle floor to allow positional readjustment. Longitudinal rails 32 (33) (Fig. 3, not shown) at each side of the plate are supported through balls 45 on rails 38 (39) fixed to the floor. One rail 32 carries a toothed rack (50) (Figs. 3 and 4, not shown) in which a locking member (53) pivotally mounted on the floor may engage. The locking member is disengaged by operating a pedal 24 on the plate and attached to the locking member by a Bowden cable 57, the plate is then moved forwardly against or rearwardly by the action of springs 48 (49) fixed between the rails 32 (33) and the floor.

PATENT SPECIFICATION

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DRAWINGS ATTACHED

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 (72) Inventor HANS DREYER



(54) MOTOR VEHICLE CONTROL PEDAL ARRANGEMENTS

(71) We, GENERAL MOTORS CORPORATION, a Company incorporated under the laws of the State of Delaware in the United States of America, of Grand Boulevard in the City of Detroit, State of Michigan in the United States of America (Assignees of HANS DREYER) do hereby declare the invention for which we pray that a patent may be granted to us and the method by which it is to be performed, to be particularly described in and by the following statement:—

The invention relates to motor vehicle control pedal arrangements for the adjustment of the pedals of motor vehicles longitudinally of the vehicles. Such a longitudinal adjustment for the pedals is necessary in those vehicles in which the seats are fixedly installed in order to increase the internal safety of the vehicle.

Moreover, in cases where the steering column is adjustable both in length and inclination, the fitting of adjustable pedals when there are fixedly installed seats offers the driver the best possible adaption to the steering wheel and pedals, having regard to his individual bodily size.

The present invention aims to solve the problem of making the pedals in motor vehicles jointly and easily adjustable, whether they are of the suspended or upstanding type, so that an individual pedal setting is made possible even for drivers of outsize bodily dimensions, whilst at the same time the arrangement is of relatively simple construction.

The scope of the invention is defined by the appended claims; how the invention may be performed is particularly described below with reference to the accompanying drawings, in which:—

Figure 1 is a schematically illustrated front portion of a passenger car with an arrangement for the adjustment of the pedals according to the invention;

Figure 2 is a side elevation of the arrangement according to the invention as shown in

Figure 1 but to an enlarged scale and partly in section;

Figure 3 is a view in the direction of the arrows III—III' in Figure 2 partly in section; and

Figure 4 is a plan of part of the arrangement and showing a releasable latch of the arrangement.

Figure 1 of the drawings shows schematically a passenger car 10, giving a clear view into the driving-side front passenger space 11 with a seat 12, a steering wheel 13 and an instrument panel 14. Reference numeral 15 denotes a selector lever for an automatic transmission (not shown). A pedal slide or plate 17 is mounted on the vehicle floor 16 and is movable longitudinally of the vehicle as indicated by the arrows. The plate 17 consists of a flat portion 18 shaped to conform to the vehicle floor, and of a portion 19 which is bent upwards at an obtuse angle to match a front panel 20 of the passenger car 10. An accelerator pedal 21, a brake pedal 22 and a foot rest 23, are mounted on the plate 17 and they are all aligned in the same plane. A release pedal 24 for the plate 17 is mounted on the plate 17 and extends above the roof rest 23. The release pedal 24 is small in comparison to the other pedals 21 and 22. As shown in Figure 2 the parts 18 and 19 of the pedal plate 17 have non-slip coverings 25 and 26 respectively. The part 18 of plate 17 has a portion 28 which extends beyond the junction of parts 18 and 19. This portion 28 constitutes a support plate. Above the support plate 28 are sheet metal parts 29, 30 and 31 fixed to the portion 19 of the plate 17. Upper rails 32 and 33 are secured, by screws 34, 35 and nuts 36, 37, to the underside of portion 18 of plate 17. The upper rails 32 and 33 are substantially U-shaped in cross-section and they fit over smaller-section lower rails 38, 39 also substantially U-shaped in cross-section. These lower rails are secured to a part 40 of the vehicle floor by screws 41, 42 and nuts 43, 44. Steel balls 45 are located

between the upper and lower rails to reduce friction upon movement of the upper and lower rails relative to one another so that the plate 17 can be readily moved by foot effort.

5 The rails 32, 38 or 33, 39 are arranged in U-section channels 46 and 47 in the floor portion 40. The rails 32, 38, 33, 39 and the channels 46, 47 are parallel to each other.

10 The depth of the channels 46, 47 and the height of the rails 32, 38, 33, 39 are such that when the pedal plate 17 is shifted rearwardly towards the seat 12, the flat portion 18 lies under a cover plate 87 secured to the vehicle floor 16 (see Figure 2).

15 Springs 48 and 49 are located one in each of the channels 46 and 47 and these springs are each anchored to one of the upper rails 32, 33 and to the floor portion 40 under the seat 12. The springs 48 and 49 bias the plate 17 for movement from a foremost position at

20 at the front end of the passenger space 11 to a rearmost position adjacent the seat 12, and this movement can take place upon operation of the release pedal 24.

25 As shown in Figure 4 a rack 50 having teeth 51 separated by tooth spaces 52 is secured to the right-hand upper rail 32. In this case the teeth extend over only a middle portion of the rack 50. Depending upon the extent of movement required for the plate 17 so the number of teeth on the rack may be varied. A catch

30 lever 53 is pivotally mounted on a bearing pedestal 54 on the floor portion 40. In Figures 3 and 4 the catch lever is shown in its latch position. The plate 17 in Figures 2-4 is in its foremost position, and the dotted line figure of the catch lever 53 in Figure 4 engaging the end tooth space of the rack 50 is intended to show the travel of the rack when

35 the plate 17 is in its rearmost position. The catch lever 53 is L-shaped and a tension wire 56 of a Bowden cable 57 is secured to the end of the shorter arm of the catch lever 53. The sheath 58 of the Bowden cable 57 bears

40 against the floor portion 40. The tension wire 56 passes through a bore 60 in the floor portion 40 and extends to the sheet metal portion 31 where it is secured to a lever 64 on a spindle 65 which is pivotally mounted in the sheet-metal portions 29 and 30. The sheath

45 58 of the Bowden cable 57 extends to the sheet-metal portion 31 to which it is secured by a threaded sleeve 61 and nuts 62 and 63. The release pedal 24 has an operating lever

50 66 in the form of two parallel stays and these stays are also mounted on the spindle 65.

60 The accelerator pedal 21 and the brake pedal 22 are pivotally mounted on a rotatable spindle 67 which extends transversely of the vehicle, across almost the entire width of the plate 17, and which is rotatably mounted in bearings 68, 69, 70 fixed on the portion 28 of the plate 17. A sleeve 71 fixed on the accelerator pedal 21 surrounds a length of

the spindle 67 and is secured thereto by pins 72 and 73. The sleeve 71 is rotatably mounted in the bearing 69 and so is a sleeve 74 fixed to the brake pedal 22 and mounted on the spindle 67. The sleeve 74 extends to the bearing 68 and at its end adjacent the bearing 68 the sleeve 74 carries a lever 75 secured to a piston rod 85 of a piston (not visible) located in an hydraulic cylinder 76 fixed, on the support plate portion 28 of the plate 17, by a clamp 86. When the brake pedal 22 is operated the piston is pushed into the hydraulic cylinder 76 and pressure fluid is delivered by way of flexible conduits (not shown) to a brake power booster (also not shown). The hydraulic cylinder 76 could form part of the power booster. The spindle 67 is bent to an L-shape at its free end which extends outwardly of the bearing 68 (as seen in Figure 3) and this bent portion forms a lever arm 77 to which is secured a tension wire 78 of another Bowden cable 79. The cable 79 has a sheath 80 secured to the sheet-metal portion 31 by means of a threaded sleeve 81 and nuts 82 and 83. From this fixed point the tension wire 78 of the cable 79 goes to a lever 84 of a throttle linkage (not shown) of the engine. It could go directly to the carburettor. When the expressions "fixed" and "secured" are mentioned, this implies the use of generally accepted methods of attachment such as welding, hard soldering, riveting, etc.

In operation, when the release pedal 24 is actuated, the lever arm 64 acting by way of the tension wire 56 of the Bowden cable 57 moves the catch lever 53 out of engagement with the teeth 51 so that the plate 17 can be moved on the rails 38 and 39 longitudinally of the vehicle. If the pedals are to be adjusted to a forward position then foot pressure on the plate 17 will overcome the bias of the springs 48 and 49 and the plate will move forwards. If adjustment towards the rearmost position is desired then the bias of the springs will move the plate rearwardly without the need for any action by the operator. Once the desired position of adjustment has been reached, the pedal 24 can be operated to move the catch lever into engagement with the rack teeth to secure the slide in its adjusted position.

WHAT WE CLAIM IS:—

1. A motor vehicle control-pedal arrangement in which, control pedals are carried on a plate, the plate is slidably mounted on a floor portion of the vehicle for movement longitudinally of the vehicle between a foremost and a rearmost position, the plate is spring-biased towards the rearmost position, and the plate is retainable in a desired position of adjustment by a releasable latch.

2. A motor vehicle control-pedal arrangement according to claim 1, in which the plate

is slidably guided on rails mounted on the vehicle floor.

5 3. A motor vehicle control-pedal arrangement according to claim 1, in which the releasable latch is operable by a pedal mounted on the plate.

10 4. A motor vehicle control-pedal arrangement according to claim 3, in which the releasable latch comprises a catch lever pivotally mounted on the vehicle floor and

movable into and out of latching engagement with a toothed rack on the plate.

5. A motor vehicle control-pedal arrangement substantially as hereinbefore particularly described with reference to, and as shown 15 in, the accompanying drawings.

D. H. O. WORKMAN,
Chartered Patent Agent.

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